

MAQTQTRRKVCYYDGDVGNYYYGQGHPMKPHRIRMTHNLLLN
YGLYRKMEIYRPHKANAEEMTKYHSDDYIKFLRSIRPDNMSEYSKOMQRFNVGEDCPV
FDGLFEFCQLSTGGSVASAVKLNKQQTDI AVNWAGGLHHAKKSEASGFCYVNDIVLAI
LELLKYHQRVLYIDIDIHHGDGVEEAFYTTDRVMTVSFHKYGEYFPGTGDLRDIGAGK
GKYAVYPLRDGIDDES YEAI FKPVMSKVMEMFQPSAVVLQCGSDSLSGDRLGCFNL
TIKGHAKCVEFVKSFNLPMLMLGGGYTIRNVARCWTYETAVALDTEIPNELPYNDYF
EYFGPDFKLHISPSNMNTNQNTNEYLEKIKQRLFENLRMLPHAPGVQMQAIPEDAIPEE
SGDEDEDDPKRISICSSDKRIACEEEFSDEEEEGEGGRKNSSNFKKAKRVKTEDEKE
KDPEEKKEVTEEEKTKEEKPEAKGVKEEVKLA (SEQ ID NO:1)

FIG. 1A

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1  atgtctggg  tctctgccc  ctggtgctgc  tgtctcccac  tcggtcatcc  tgagaacaca
61  gcctgagcgr  ctctgtcact  cggggtagac  cgcgcgggga  ggcgagcaag  atggcgcaga
121  cgcagggcac  ccggaggaaa  gtctgttact  actacgacgg  gcatgttga  aattactatt
181  atggacaagg  ccacccaatg  aagcctcacc  gaatccgcat  gactcataat  ttgctgctca
241  actatggtct  ctaccgaaaa  atggaatat  atcgccctca  caagccaat  gctgaggaga
301  tgaccaagta  ccacagcgat  gactacatta  aattcttgcg  ctccatccgt  ccagataaca
361  tgtcggagta  cagcaagcag  atgcagagat  tcaacgttgg  tgaggactgt  ccagtattcg
421  atggcctggt  tgagttctgt  cagttgtcta  ctggtggttc  tgtggcaagt  gctgtgaaac
481  ttaataagca  gcagacggac  atcgccgtga  atbggctgg  gggcctgcac  catgcaaaaga
541  agtccgaggc  atctggcttc  tgttacgtca  atgatatcgt  cttggccatc  ctggaactgc
601  taaagtatca  ccagagggtg  ctgtacattg  acattgatat  tcaccatggt  gacggcgtgg
661  aagaggcctt  ctacaccacg  gaccgggtca  tgaactgttc  cttcataag  tatggagagt
721  acttcccagg  aactggggac  ctacgggata  ccgggctgg  caaagacaag  tattatgctg
781  ttaactacc  gctccgagac  gggattgatg  acgagtccta  tgaggccatt  ttcaagccgg
841  tcatgtccaa  agtaatggag  atgttccagc  ctagtgcgt  ggtcttacag  tgtggtcag
901  actccctatc  tggggatcgg  tttaggttgc  tcaatctatc  tatcaaaagg  cagcccaagt
961  gtgtggaaat  tgtcaagagc  tttaacctgc  ctatgctgat  gctgggaggc  ggtggttaca
1021  ccattcgtaa  cgttgccccg  tgctggacat  atgagacagc  tgtggccctg  gatacggaga
1081  tccctaata  gcttccatag  aatgactact  ttgaatactt  tggaccagat  ttcaagctcc
1141  acatcagtc  ttccaatatg  actaaccaga  acacgaatga  gtacctggag  aagatcaaac
1201  agcgactgt  tgagaacctt  agaatgctgc  cgcacgcacc  tggggtccaa  acgcaggcga
1261  ttcctgagga  cgccatccct  gaggagagt  gcgatgagga  cgaagacgac  cctgacaagc
1321  gcatctcgat  ctgctcctct  gacaaaacga  ttgcctgtga  ggaagagttc  tccgattctg
1381  aagaggagg  agaggggggc  cgcaagaact  cttccaactt  caaaaaagcc  aagagagtca
1441  aaacagagga  tgaaaaagag  aaagacccag  aggagaagaa  aggaatcacc  gaagaggaga
1501  aaaccaagga  ggagaagcca  gaagccaaag  ggttcaagga  ggaggccaag  ttggcctgaa
1561  tggacctctc  cagctctggc  ttcctgctga  gtccctcacg  tttctttccc  c (SEQ ID NO:2)

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FIG. 1B

MAYSQGGKKCKVCYYDGDIGNYYYGQGHPMKPHRIRMTHNLLL
 NYGLYRKMEIYRPHKATAEMTKYHSDEYIKFLRSIRPDNMSEYSKQMHIPFNVGEDCP
 AFDGLFEFCQLSTGGSVAGAVKLNRRQQTDMAVNWAGLHHAKKYEASGFCYVNDIVLA
 ILELLKYHORVLYDIDIHHRGDGVEEAFYTTDRVMTVSFYGEYFPGTGLRDIGAG
 KGKYYAVNFP McDIDDES YGQIFKPIISKVMEYQPSAVVLQCGADSLSGDRLGCFN
 LTVKGHAKCVEVVKTFNLPLLLMLGGGYTILRNVARCWTYETAVALDCEIPNELPYNDY
 FEYFGPDFKLHISPSNMTNQNTPEYMEKIKQRLFENLRMLPHAPGVQMQAIPEDAVHE
 DSGDEGEDPDKRISIRASDKRIACDEEFSDEGEGERNVADHKKGAKARIEED
 KKETEDKKTVDVKEEDKSKDNSGEKTDTKGTKSEQLSNP (SEQ ID NO:3)

FIG. 2A

1 cgccgagctt tggcacctc tggcgggtgg taccgagcct tcccggcgcc cctcctctc
 61 ctccaccgg cctggccctc ccgcggggac tatcgccccc acgtttccct cagccctttt
 121 ctctccggc cgagccgcg tgcccgggga gacagcagc agcagcagc gaggagccg
 181 gtggcgggc tgcccgggga gacagcagc gacagcagc gacagcagc aaaaaaagc
 241 tgctactact acgacggtga cccatggaat tattatatg gacagcagc tcccatgaag
 301 cctcatagaa tccgcatgac ccataactg agccactgcc caaatatca cagtaaatg
 361 gaaatatata gggcccataa tctacggtc aataagacca gataacatg ctgagtatg
 421 tataataaat ttctacggtc atgttgga gctgtgcca gctgtgcca gactgatg
 481 catatatata atgttgga gctgtgcca gctgtgcca gctgtgcca gactgatg
 541 ctctcaactg gctgtgga gctgtgga gctgtgga gctgtgga gactgatg
 601 gctgttaatt gctgtgga gctgtgga gctgtgga gctgtgga gactgatg
 661 tacgttaatt gctgtgga gctgtgga gctgtgga gctgtgga gactgatg
 721 tatatcgata gctgtgga gctgtgga gctgtgga gctgtgga gactgatg
 781 cgtgtaattg gctgtgga gctgtgga gctgtgga gctgtgga gactgatg
 841 agggatattg gctgtgga gctgtgga gctgtgga gctgtgga gactgatg
 901 atagacgatg gctgtgga gctgtgga gctgtgga gctgtgga gactgatg
 961 tatcaacctg gctgtgga gctgtgga gctgtgga gctgtgga gactgatg
 1021 ggtgttttca gctgtgga gctgtgga gctgtgga gctgtgga gactgatg
 1081 aacttaccat gctgtgga gctgtgga gctgtgga gctgtgga gactgatg
 1141 tggacatatg gctgtgga gctgtgga gctgtgga gctgtgga gactgatg
 1201 gattactttg gctgtgga gctgtgga gctgtgga gctgtgga gactgatg
 1261 aaccagaaca gctgtgga gctgtgga gctgtgga gctgtgga gactgatg
 1321 atgttacctc gctgtgga gctgtgga gctgtgga gctgtgga gactgatg
 1381 gacagtgga gctgtgga gctgtgga gctgtgga gctgtgga gactgatg
 1441 aagcggatag gctgtgga gctgtgga gctgtgga gctgtgga gactgatg
 1501 agaaatgtgg gctgtgga gctgtgga gctgtgga gctgtgga gactgatg
 1561 gaaacagagg gctgtgga gctgtgga gctgtgga gctgtgga gactgatg
 1621 gaaaaaacag gctgtgga gctgtgga gctgtgga gctgtgga gactgatg
 1681 tctaccaaat gctgtgga gctgtgga gctgtgga gctgtgga gactgatg
 1741 gaagacttct gctgtgga gctgtgga gctgtgga gctgtgga gactgatg
 1801 actttttcgt gctgtgga gctgtgga gctgtgga gctgtgga gactgatg
 1861 aaattttcgt gctgtgga gctgtgga gctgtgga gctgtgga gactgatg
 1921 gtcaaaaaaa gctgtgga gctgtgga gctgtgga gctgtgga gactgatg
 1981 aaaag (SEQ ID NO:4) tggcctttc ttgagctgaaa ttttctttt ttcaaatggg ttatgaagca gagttatat aaaaaaaa

FIG. 2B

MAKTVAIFYDPDVGNFHYGAGHPMKPHRLALTHSLVLHYGLYKK
MIVFKPYQASQHDMCRFHSEDIYIDFLQRVSPTNMQGFTKSLNAPNVGDDCPVFPGLFE
FCSRYTGASLQGATQLNNKICDIANWAGGLHHAKKFEASGFCYVNDIVIGILELLLY
HPRVLYIDIDIHHGDGVQEA FYLTDRVMTVSFHKYGN YFFPGTGDMYEVGAESGRYYC
LNVPLRDGIDDQSYKHLFQPVINQVVD FYQPTCIVLQCGADSLGCDRLGCFNLSIRGH
CECVEYVKSFNIPPLLVLGGGGYTVRNVARCWTYETSLLLVEEAISEELPYSEYFEYFAP
DFTLHPDVSTRIENQSRQYLDQIRQTIFENLKMNLNHAPSVQIHDVPADLLTYDRTDE
ADAEERGPEENYSRPEAPNEFYDGDHDNDKESDVEI (SEQ ID NO:5)

FIG. 3A

1 ggaattcgcg gccgcggcgg gcgcggggagg tgcgggggcct gctccgcgcg gcaccatggc
61 caagaccgtg gcctatttct acgaccccgga cgtgggcaac cttccactacg gagctggaca
121 ccctatgaag ccccatcgcc tggcattgac ccatagcctg gtccctgcatt acggtctcta
181 taagaagatg atcgtcctca tacattgact agccatacca ggcctcccaa catgacatgt gccgcttcca
241 ctccgaggac taatgccttca aatgccttca acgtgagcga tgcactgcca gcaaggagca accagctga acaacaagat
301 caagagtctt cgttacacag gccattaaat tatgtcaacg tacattgaca cgggtcattgac ccataaatac gaaattact tcttccctgg
361 gtctgtctcg cgttacacag gccattaaat tatgtcaacg tacattgaca cgggtcattgac ccataaatac gaaattact tcttccctgg
421 ctgtgatatt tggcttctgc tgcactgac cagagtgac cctgcgggat ggtagtggac ttctacgaac cctcactgac cagagtgac
481 tggcttctgc tgcactgac cagagtgac cctgcgggat ggtagtggac ttctacgaac cctcactgac cagagtgac
541 tgcgggtgctc tgcactgac cagagtgac cctgcgggat ggtagtggac ttctacgaac cctcactgac cagagtgac
601 cctcactgac cagagtgac cctgcgggat ggtagtggac ttctacgaac cctcactgac cagagtgac
661 cagagtgac cctgcgggat ggtagtggac ttctacgaac cctcactgac cagagtgac
721 cctgcgggat ggtagtggac ttctacgaac cctcactgac cagagtgac
781 ggtagtggac ttctacgaac cctcactgac cagagtgac
841 cgtgatcga ttggtgctgct ttcaaatatcc tgcctgacat agtgaatact atcgagaatc atcgagaatc atcgagaatc
901 tgtcaagagc ttggtgctgct ttcaaatatcc tgcctgacat agtgaatact atcgagaatc atcgagaatc atcgagaatc
961 tgtgctccctat agtgaatact atcgagaatc atcgagaatc atcgagaatc atcgagaatc atcgagaatc atcgagaatc
1021 cagcaccgcc ctttgaaaac agacctcctg agacctatagc gaaagcgcat cactctcttg cactctcttg cactctcttg
1081 ctttgaaaac agacctcctg agacctatagc gaaagcgcat cactctcttg cactctcttg cactctcttg cactctcttg
1141 agacctcctg agacctatagc gaaagcgcat cactctcttg cactctcttg cactctcttg cactctcttg cactctcttg
1201 gaaagcgcat cactctcttg agacctatagc gaaagcgcat cactctcttg cactctcttg cactctcttg cactctcttg
1261 gaaagcgcat cactctcttg agacctatagc gaaagcgcat cactctcttg cactctcttg cactctcttg cactctcttg
1321 cactctcttg agacctatagc gaaagcgcat cactctcttg cactctcttg cactctcttg cactctcttg cactctcttg
1381 gaaagcgcat cactctcttg agacctatagc gaaagcgcat cactctcttg cactctcttg cactctcttg cactctcttg
1441 gaaagcgcat cactctcttg agacctatagc gaaagcgcat cactctcttg cactctcttg cactctcttg cactctcttg
1501 cactctcttg agacctatagc gaaagcgcat cactctcttg cactctcttg cactctcttg cactctcttg cactctcttg
1561 cactctcttg agacctatagc gaaagcgcat cactctcttg cactctcttg cactctcttg cactctcttg cactctcttg
1621 agacctatagc gaaagcgcat cactctcttg cactctcttg cactctcttg cactctcttg cactctcttg cactctcttg
1681 agacctatagc gaaagcgcat cactctcttg cactctcttg cactctcttg cactctcttg cactctcttg cactctcttg
1741 agacctatagc gaaagcgcat cactctcttg cactctcttg cactctcttg cactctcttg cactctcttg cactctcttg
1801 agacctatagc gaaagcgcat cactctcttg cactctcttg cactctcttg cactctcttg cactctcttg cactctcttg
1861 agacctatagc gaaagcgcat cactctcttg cactctcttg cactctcttg cactctcttg cactctcttg cactctcttg
1921 agacctatagc gaaagcgcat cactctcttg cactctcttg cactctcttg cactctcttg cactctcttg cactctcttg

(SEQ ID NO:6)

FIG. 3B

MLAMKHQQELLEHQKLERHRQEQELEKQHREQKLQQLKKEKG
KESAVASTEVMKMLQEFVLNKKKALAHPNLNHCISSCPRYWYKQTQHSSLDQSSPPQS
GVSTSYNHPVLGMYDAKDDFPLRKTASEPNLKLRSRLKQKVAERRSSPLLRRKDGPPV
TALKKRPLDVTDSACSSAPGSGPSSPNNSSGSVAENGIAPAVPSIPAETSLAHLVA
REGSAAPLPLYTSPSLPNITLGLPATGPSAGTAGQDTERLTLPALQQRLSLFPGTHL
TPYLSTSPLERDGAHSPLLQHMVLLLEQPPAQAPLVTGLGALPLHAQSLVGADRVSP
SIHKLRQHRPLGRTQSAPLPQNAQALQHLVIOQQHQQFLEKHKQQFQQQLQMNKIIP
KPSEPARQPESHPEETEELREHQALLDEPYLDRLPQGKEAHAQAGVQVKQEPIDESDE
EEAEPPREVEPGQRQPSQELLFRQQALLLEQQRIHQLRNYQASMEAAAGIPVSFGGHR
PLSRAQSSPASATFPVSVQEPPTKPRFTTGLVYDTLMLKHQCTCGSSSSHPEHAGRIQ
SIWSRLQETGLRGKCECIRGRKATLEELQTVHSEAHTLLYGTNPLNRQKLD SKKLLGS
LASVFVRLPCGGVGVDSDTIWNEVHSAGAAARLAVGCVVVELVFKVATGELKNGFAVVRP
PGHHAEESTPMGFCYFNSVAVAAKLLQQRLSVSKILIVDWDVHHGNGTQQAFYSDPSV
LYMSLHRYDDGNFFPGSGAPDEVGTGPGVGFNVNMAFTGGLDPPMGDAEYLA AFRTVV
MPIASEFAPDVVLASSGFDAVEGHPTPLGGYNLSARCFGYLTKQLMGLAGGRIVLALE
GGHDLTAICDASEACVSALLGNELDPLPEKVLQQRPNANAVRSM EKVM EIH SKYWRCI
QRTTSTAGRSLIEAQTCENEEAEETVTAMASLSVGVKPAEKRPDEEPMEEEPPL (SEQ ID NO:7)

FIG. 4A

| |
|-----------|
| FIG. 4B-1 |
| FIG. 4B-2 |
| FIG. 4B-3 |
| FIG. 4B-4 |
| FIG. 4B-5 |

FIG. 4B

1 ggaggttggtg gggccgccgc cgcggagcac cgtccccgcc gccgcccgag cccgagcccgc
61 agcccgcgca ccgcccgcgc ccgccgccgc cgcgccccga acagcctccc agcctgggcc
121 ccggcgggcg ccgtggccgc gtccggctg tgcgccccg agcccgagcc cgcgcgccgc
181 cgggtggcgg cgcaggctga ggagatgcgg cgcggagcgc cggagcaggg cttagagccgc
241 ccgccgccgc ccgcccggt aagcgagcc ccggccccgc gccgcgggc catgtgcc
301 cgcgccgccg gcgccccgcg cagcctgcag gcctggagc ccgggcagg tggacgccgc
361 cggtcacac ccgccccgcg cgcggccgtg ggaggcgggg gccagcgtg gccgcgccgc
421 gtgggacccg ccggtcccca ggccgccccg gcccttctg gaccttcca ccgcgcgcc
491 gaggcggctt cgcgccccgc ggccggggcg cgggggtggg caccgcagg agcggcgccg
541 tctcccggtg cggggccgcg gcccccgcg caggttcatc tgcagaagcc agcggacgcc
601 tctgttcaac ttgtgggtta cctggctcat gagacctgc cggcaggct cgcgccttga
661 acgtctgtga ccagccctc accgtcccgc tacttgtatg tgttggcggg agtttgagc
721 tcgttgagc tctgtttcc gtggaattt tgagccattt cgaatcactt aaaggagtgg
781 acattgctag caatgagctc ccaaagccat ccagatggac ttctggccg agaccagcca
841 gtggagctgc tgaatcccgc ccgcgtgaac cacatgcca gcacgggtga tgtggccacg
901 gcgtgcctc tgcaagtggc ccccccggca gegccatgg accgcgcct ggaccaccag
961 ttctcactgc ctgtggcaga gccggcccctg cgggagcagc agctgcagca ggagctcctg

FIG. 4B-1

1021 gcgctcaagc agaagcagca gatccagagg cagatcctca tcgccgaggtt ccagaggcag
 1081 cacgagcagc tctcccgga gacgaggcg cagctccacg agcacatcaa gcaataacag
 1141 gagatgctgg ccatgaagca ccagcaggag ctgctggaac accagcgga accagcagg
 1201 caccgccagg agcaggagct ggagaagcag caccgggagc agaagctgca gcagctcaag
 1261 aacaaggaga agggcaaga gagtgccgtg gccagcacag aagtgaagat gaagttacaa
 1321 gaatttgtcc agagaccctc gactagtgtg tcaataaaaa gaaggcgctg atctgaacca ctgcaattcc
 1381 cccagagcg gatgctgac ctcttaggaa aacagcttct caccgggtcc tgggaatgta cgacgccaaa
 1441 gatgacttcc aagcagaaag tggccgaaag acggagcagc cccctgttac gaaccgaatc tggaatcacg gtccaggcta
 1501 gtcactgctc ggctccggac ccagctcac taaaagcgg tccgttggat gtccagact ccgctgagc caggccagtg
 1561 gcgcccgcgg cagctccact ccccgccc ctctgccc acgagtttgg cgcacagact ccttgcccaa catcacgctg
 1621 gaaggctcgg ggcctgcctg ccctccagca gaggctctcc cttttcccg gcacccacct cactccctac
 1681 ctgagcacct atggtcttac cccctccacg cagccttggg ggggacgagc gcacccctct acagccctct tctgcagcac
 1741 gcgcccgcgg cagctccact ccccgccc cagctccac ccagctcac taaaagcgg tccgttggat gtccagact ccgctgagc caggccagtg
 1801 gaaggctcgg ggcctgcctg ccctccagca gaggctctcc cttttcccg gcacccacct cactccctac
 1861 ggcctgcctg ccctccagca gaggctctcc cttttcccg gcacccacct cactccctac
 1921 acccttcccg ctgagcacct atggtcttac cccctccacg cagccttggg ggggacgagc gcacccctct acagccctct tctgcagcac
 1981 ctgagcacct atggtcttac cccctccacg cagccttggg ggggacgagc gcacccctct acagccctct tctgcagcac
 2041 atggtcttac cccctccacg cagccttggg ggggacgagc gcacccctct acagccctct tctgcagcac
 2101 cccctccacg cagccttggg ggggacgagc gcacccctct acagccctct tctgcagcac
 2161 cggcagcacc tggcagcacc gcccactggg gccactggg ggcgacccag cagcagctat tggcagcacc
 2221 ctgcagcacc tggcagcacc gcccactggg gccactggg ggcgacccag cagcagctat tggcagcacc
 2281 ttcagcagc agcaactgca gatgaacaag atcatcccca agccaagcga gccagcccg gccagcccg
 2341 cagccggaga gccacccgga ggagacggag gaggagctcc gtgagcacca ggctctgctg
 2401 gacgagccct accctggaccg gctgccgggg cagaaggagg cagagccccc acgggaggtg
 2461 caggtgaagc aggagcccat tgaagcgtat gaggaagagg gaggccccc cagagccccc acgggaggtg
 2521 gagccgggccc agcggcagcc cagtgaagcag gagctgtctt aactaccagg cgtccatgga ggcgcccggc
 2581 ctggagcagc atccccgtgt ccttcggcgg ccacaggcct ccgtcccggg cgcagctcct acccggtct
 2641 atccccgtgt ccttcggcgg ccacaggcct ccgtcccggg cgcagctcct acccggtct
 2701 gccaccttcc ccgtgtccgt gcaggagccc tgcacctgag gacaggtcac gacaggtcac
 2761 gtgtatgaca cgctgatgct gaagcaccag tgcacctgag gacaggtcac gacaggtcac
 2821 gagcacgccc ggaggatcca gagcatctgg tcccgcctgc agaagacggg cctccggggc

FIG. 4B-2

2881 aaatgcgagt gcatccgcgg acgcaaggcc accctggaag agctacagac ggtgcactcg
 2941 gaagccacac ccctcctgta tggcacgaaac cccctcaacc ggcagaaact ggacagtaag
 3001 aaacttctag gctcgcctcg ctcctgtctc gcaggtgcac tcggcggggcagccgcct ggctgtgggc
 3061 gacagtgaca ccataatgaa agctggtctt caaggtggcc acaggggagc tgaataatgg ctttgctgtg
 3121 tgcgcccccc ctggacacca tggcagccaa gcttctgcag agcacgcca agggcttttg ctacttcaac
 3181 gtcgcccccc ctggacacca tggcagccaa gcttctgcag acccagcagg ctttctacag gacccctagc
 3241 tccgcgcccg tggcagccaa gcttctgcag acccagcagg gatgggaact tcttcccagg cagcggggct
 3301 tgggactggg acgtgcacca tggcagccaa gcttctgcag acccagcagg gatgggaact tcttcccagg cagcggggct
 3361 gtcctgtaca tgtccctcca tggcagccaa gcttctgcag acccagcagg gatgggaact tcttcccagg cagcggggct
 3421 cctgatgagg tgggcacagg gcccggcgtg ggtttcaacg tcaacacggc tttcacccgc
 3481 ggcctggacc ccccctggg agacgctgag tacttggcgg ccttcagaaac ggtggtaatg
 3541 ccgatacgca gcgagtctgc cccggtgtg gctgctggtg catcaggctt cgatgccgtg
 3601 gagggccacc ccacccctct tgggggctac aacctctccg cggattgtcc tggccctcga gggaggccac
 3661 acgaagcagc tgatgggctt cgctcggaa gcatgtgttt ctgccttgct tggccttgct gggaaacgag
 3721 gacctgaccg ccatttgca tccagaaaaa ggttttacag caaagaccca atgcaaacgc tgtccgttcc
 3781 ctgatacctc tccagaaaaa ggttttacag caaagaccca tactggcgtt gctgcagcg cacaacctcc
 3841 atggagaaag tcatggagat tcatggagat ccacagcaag tactggcgtt gctgcagcg cacaacctcc
 3901 acagcggggc gttctctgat gttctctgat cgaggctcag acttgcgaga acgaagaagc cgagacggtc
 3961 accgccatgg cctcgcgtgc cctcgcgtgc cgtggacgtg aagcccgccg aagcagagacc agatgaggag
 4021 cccatggaag aggagccgcc cctgtagcac cctcctcgaag tccctgttct ctgctgttct tccaccgtg
 4081 tgtctctgtc ttgaagctca ttccctgtg tttccgtgt cagcctgctg gccacgggaa gcctttctgc
 4141 gggctctctt ggagcaccac cagaggtctc gagacgcaca tgcacgcctg ggcgtggcag cctcacaggg
 4201 cggccaggcc cagaggtctc gagacgcaca tgcacgcctg ggcgtggcag cctcacaggg
 4261 aacacgggac agacgcccgc gacgcgcaga cacacggaca cgcggaagcc aagcacactc
 4321 tggcgggtcc cgcaagggac gccgtggaag aaaggagcct gtggcaacag gcgccgagc
 4381 tgcggaattc agttgacacg aggcacagaa acaaaatatac aaagatctaa taatacaaaa
 4441 caaacttgat taaaactggt gcttaaaagt tattaccac aactccacag tctctgtga
 4501 aaccactcga ctcatctgt agcttatttt ttttttaag aggacgtttt ctacggctgt
 4561 gcccgcctc tgtgaaccat agcgggtgtgc ggcggggggg ctgcaccgg gtggggggaca
 4621 gagggacctt taagaaaaa aaaactggac agaaacagga atgtgagctg ggggagctgg
 4681 cttgagtctc tcaaaagcca tcggaagatg cgagtttgtg cctttttttt tattgctctg

FIG. 4B-3

4741 gtggattttt gtggctgggt tttctgaagt ctgaggaaca atgccttaag aaaaaa
 4801 cagcaggaat cggtaggaca gtttctgtg gccagccgag cctggcagtg ctggcacccg
 4861 gagctggcct gacgcctcaa gacggggcac gaccgtcat ctccggggcc aggggctgca
 4921 gccggcgggt cctgtgtttg ctttattgct gtttaagaaa aatggaggtg gttccaaaaa
 4981 agtggcaaat cccgttggag gtttgaagt ccaacaaat taaacgaat ccaaagtgtt
 5041 ctcacacgtc acatacgatt gagcatctcc atctggtcgt gaagcatgtg gtaggcacac
 5101 ttgcagtgtt acgatcggaa tgctttttat taaaagcaag tagcatgaag tattgcttaa
 5161 attttaggta taaataaata tataatatga taaatgtat tccaatgtat tccaaagctaa
 5221 gaaacttact tgattcttat gaaatctga taaaatattt ataatgcatt tatagaaaaa
 5281 gtatatatat atatataaaa tgaatgcaga ttgcgaaggt cctgcaaat ggatggcttg
 5341 tgaatttgct ctcaaggtgc ttatggaaag gcatcctgat tgattgaaat tcatgttttc
 5401 tcaagctcca gattggctag atttcagatc gccaacacat tcgccactgg gcaactaccc
 5461 tacaagtttg tactttcatt ttaattattt tctaacagaa ccgctccctg ctccaagcct
 5521 tcatgcacat atgtacctaa tgagttttta tagcaagaa tataaatttg ctgttgattt
 5561 ttgtatgaat tttttcacaa aaagatcctg aataagcatt gttttatgaa ttttacattt
 5641 ttcctcacca tttagcaatt ttccgaatgg taataatgtc taaatctttt tcctttctga
 5701 attcttgctt gtacattttt ttttaccttt caaaggtttt taattattt tgtttttatt
 5761 tttgtacgat gatttttctg cagcgtacag aattgttgct gtcagattct attttcagaa
 5821 agtgagagga gggaccgtag gtctttttcg agtgacacca acgatgtgtt ctttcctggg
 5881 ctgtccctagg agctgtataa agaagccctg gggctctttt taactttcaa cactagtagt
 5941 attacgaggg gtggtgtgtt ttccctctcc gtggcaaggg cagggagggt tgcttaggat
 6001 gccgggccac cctgggaggc ttgccagatg ccggggggcag tcagcattaa tgaactcat
 6061 gtttaaaactt ctctgaccac atcgtcagga tagaatctta acttgagttt tccaaacacc
 6121 ttttgagcat gtcagcaatg catggggcac acgtggggct cttaccac ttgggttttt
 6181 cactgcagc cacgtggcca gccctggatt ttggagcctg tggctgcaag gaaccaggg
 6241 acccttgctg cctgggtgaac ctgcaggag ggtatgattg cctgaccagg acagccagtc
 6301 ttactctttt ttctctcaa cagtaactga cagtcacgtt ttaactgtaa cttattttcc
 6361 agcacatgaa gccaccagtt tcattccaaa gtgtatatgg ggttcagact tgggggcaga
 6421 agttcagaca caccgtgctc aggagggacc cagagccgag tttcggagtt tggtaagt
 6481 tacagggtag cttctgaaat taactcaaac ttttgaccaa atgagtgtag attcttggat
 6541 tcaacttggtc actgggctgc tgatggtcag ctctgagaca gtggtttgag agcaggcaga

FIG. 4B-4

6601 acggtcttgg gacttgtttg actttcccct ccctggtggc cactctttgc tctgaagccc
6661 agattggcaa gaggagctgg tccattcccc attcatggca cagaacagtg gcagggccca
6721 gctagcaggc tcttctggcc tccttggcct cattctctgc atagccctct ggggatcctg
6781 ccacctggcc tcttaccctg tcttggtcta tgggaggaa tgcatactct cactttttt
6841 ttttaagcag atgatgggat aacatggact gctcagtggc caggttatca gtggggggac
6901 ttaattctaa tctcattcaa atggagacga cctctgcaa ggcctggcag ggggagggcaa
6961 gtttcacttg tcaactcact ccagcttcac aaatgtgctg agagcattac tgtgtagcct
7021 tttctttgaa gacacactcg gctcttctcc acagcaagcg tccagggcag atggcagagg
7081 atctgcctcg gcgtctgcag gcgggaccac gtcaggagg gtcccttcac gtgttctccc
7141 tgtgggtcct tggaccttta gcccttttct tcctttgcaa aggccttggg ggcactggct
7201 gggagtcagc aagcagcac tttatatccc tttagggaa accctgatga cgcactggg
7261 cctcttggcg tctgacctgc cctgcctgct tccgctggtg ccgagcgtg ccacgtgccc
7321 cagccccac cagcaggcgg ctgccccga ggccgtggcc cgctgggact ggccgcccc
7381 cccagcgtc ccagggtctt ggttctggag ggccactttg tcaagggtgtt tcagtttttc
7441 tttacttctt ttgaaaatct gtttgcaagg ggaaggacca ttctgtaatg gtctgacaca
7501 aaagcaagtt tgatttttgc agcactagca atggactttg ttgcttttct ttttgatcag
7561 aacattcctt ctttactggt cacagccacg tgctcattcc attctcttt ttgtagactt
7621 tgggcccacg tgttttatgg gcattgatac atataaat atataatat aaatatatat
7681 gaatacattt ttttaagttt cctacacctg gaggttgcac gactgtacg accggcatga
7741 ctttatattg tatacagatt ttgcacgcca aactcggcag ctttggggaa gatggaaatt tttctgtaa
7801 gcctttctgt tcccctctca agggcgggga agtttgcgtc ttattgaact tattcttaag
7861 acaaaaacctt gaaggagagg ttttatgtta aaaggactac ttaaacattt gtcatattaa
7921 aaattgtact ttttatgtta ctctgacat accaataata gagtttattg tatttatgtg
7981 gaaaaaaagt ttatctagca ctctgacat ttcacagtga actgcctgtc tctctcagat
8041 gaaacagtgt tttagggaaa ttgttttgtt ttgttttgtt ccttttatct ccttccacgg
8101 tgatttgag gaattttgtt cctcactggc cttgtgacgg tttatcttga ttgagaactg
8161 gccaggcgag cgcgcctccc ctctccgca cagctgtgtt gactttttaa ttacttttag
8221 ggcggactcg aaagagtccc cactttaagc agtcgtgaac tgtgcgagca ctgtggttta
8281 gtgatgtatg gctaaagattt aggaaaccat ttcttcattg taacgaagct gagcgtgttc
8341 caattatact ttgcatacga ctcactttgt gattaaaaag ctgctattga aagaaaaag (SEQ ID NO:8)
8401 ttagctcggc

LRQGGTLTGKFMSTSSIPGCLLGVALEGDSPHGHASLLQHVL
LEQARQQSTLIAVPLHGQSPPLVTGERVATSMRTVGKLPRRPLSRTQSSPLPQSPQAL
QQLVMQQQHQQFLEKQKQQQLQLGKILTKTGELPRQPTTHPEETEEELTEQQQEVLLGE
GALTMPREGSTESESTQEDLEEEDEEEEDGEEEDCIQVKDEEGESGAEEGPDLEEPGA
GYKKLFSDAQPLQPLQVYQAPLSLATVPHQALGRQTQSSPAAPGGMKSPDPQPVKHLFT
TGVVYDTFMLKHQCMCGNTHVHPEHAGRIQSIWSRLQETGLLSKCERIRGRKATLDEI
QTVHSEYIHTLLYGTSPNLNRQKLDKKLLGPIQKMYAVLPCGGIGVDSDTVWNEMHSS
SAVRMAVGCLLELAFKVAAGELKNGFAIIRPPGHAAEESTAMGFCFFNSVAITAKLLQ
QKLVNGKVLIVDWDIHHGNGTQQAFYNDPSVLYISLHRYDNGNFFPFGSGAPEEVEGGRP
GVGYNVNVAWTGGVDPPIGDVEYLTAFRTVVMPIAHEFFSPDVVTLVSAGFDAVEGHLSP
LGGYSVTARCFGHLTRQLMTLAGGRVVLALGGHDILTAICDASEACVSALLSVELQPL
DELVLQQKPNINAVATLEKVETQSKHWSVCQKFAAGLGRSLREAQAGETEEAETVSA
MALLSVGAEQAAAAAREHSPRPAEEPMEQEPAL (SEQ ID NO:9)

FIG. 5A

| |
|-----------|
| FIG. 5B-1 |
| FIG. 5B-2 |

FIG. 5B

1 ccctgaggca gggtagcacg ctgaccggca agttcatgag cacatcctct attcctggct
 61 gcctgctggg cgtggcactg gagggcgacg ggagcccca cgggcacgctgc
 121 agcatgtgct gttgctggag caggcccgcc agcagagcac cctcattgct gtgccactcc
 181 acgggcagtc ccactagtg acgggtgaac gtgtggccac cagcatgcgg acggtaggca
 241 agctcccgcg gcatcggccc ctgagccgca ctcagtcctc accgctgcgg cagagtcctc
 301 aggccctgca gcagctggc atgcaacaac agcaccagca gtccctggag aagcagaagc
 361 agcagcagct acagctggc agatcctca ccaagacagg ggagctgccc aggcagccca
 421 ccaccacccc taggagaga gaggaggagc tgacggagca gcaggaggtc ttgctggggg
 481 agggagccct gaccatgccc gaggagggtc ccacagagag tgagagcaca caggaagacc
 541 tggaggagga ggacgaggaa gaggatgggg agcagaggga ggattgcac caggttaagg
 601 acgaggaggg cgagagtggc gctgaggagg ggcccgactt ggaggagcct ggtgctggat
 661 acaaaaaact gttctcagat gccagccgc tgcagccttt gcagggtgtac caggcgcccc
 721 tcagcctggc cactgtgccc caccaggccc tgggccgtac ccagtcctcc cctgctgccc
 781 ctggggggcat gaagagcccc ccagaccagc ccgtcaagca cctcttcacc acagggtgtgg
 841 tctacgacac gttcatgcta aagcaccagt gcattgtgcgg gaacacacac gtgcaccctg

FIG. 5B-1

```

901 agcatgctgg cggatccag agcatctggt cccggctgca ggagacaggg ctgcttagca
961 agtgcgagcg gatccgaggt cgcaagcca cgctagatga gatccagaca gtgcaactctg
1021 aataccacac cctgctctac gggaccagtc cctcaaccg gcagaagcta gacagcaaga
1081 agttgctcgg ccccatcagc cagaagatgt atgctgtgct gccttctggg ggcattcgggg
1141 tggacagtga caccgtgtgg aatgagatgc actcctccag tgctgtgctg atggcagtgg
1201 gctgcctgct ggagctggcc ttcaaggtgg ctgcaggaga gctcaagaat ggatttgcca
1261 tcatccggcc ccaggacac cagccgagg aatccacagc cacgggattc tgcttcttca
1321 actctgtagc catcacgca aaactcctac agcagaagtt gaacgtgggc aaggtcctca
1381 tcgtggactg ggacattcac catggcaatg gacccagca ggcgttctat aatgacccct
1441 ctgtgctcta catctctctg catcgctatg acaacgggaa ctctcttcca ggctctgggg
1501 ctctgaaga ggttggtgga ggaccaggcg tggggtacaa tgtgaacgtg gcatggacag
1561 gaggtgtgga ccccccatt ggagacgtgg agtaccttac agccttcagg acagtggtag
1621 tgccatttgc ccacgagttc tcacctgatg tggctcctagt ctccgccggg tttgatgctg
1681 ttgaaggaca tctgtctcct ctgggtggct actctgtcac gccagatgt ttggccact
1741 tgaccaggca gctgatgacc ctggcaggcg gccgggtggt gctggccctg gagggaggcc
1801 atgacttgac cgccatctgt gatgccctcg aggccttgtgt ctgggctctg ctcagtgtag
1861 agctgcagcc cttggatgag gcagtcttgc agcaaaagcc caacatcaac gcagtggcca
1921 cgctagagaa agtcatcgag atccagagca aacactggag ctgtgtgcag aagttcgccg
1981 ctggtctggg ccggtccctg cgagaggccc aagcaggtga ggccgaggag gccgagactg
2041 tgagcgccat ggccttgctg tcggtggggg ccgagcaggc ccaggctgcg gcagccccggg
2101 aacacagccc caggccggca gaggagcca tggagcagga gcctgccctg tgacgccccg
2161 gccccatcc ctctcggctt caccattgtg atttgttta tttttcttat taaaaacaaa
2221 aagtcacaca ttc (SEQ ID NO:10)

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FIG. 5B-2

1 mtstgqdstt trrrsrqnp qspqdssvt skrnkkgav prsipnlaev kkkgkmmkklg
61 gameedliv lqgmdlnlea ealagtglvl deqlnefhcl wddsfpegpe rlhaikeqli
121 qeglldrcvs fqarfaekee lmlvhsleyi dlmettqymn egelrvladt ydsvylhpns
181 yscacilasgs vlrlvdavlg aeirngmai rppghhaqhs lmdgycmfhn vavaaryaqq
241 khrirrvliv dwdvhhgqgt qftfdqdpv lyfsihryeq grfwphlkas nwsttgfgqg
301 qgytinvpwn qvgmrdadyi aafhlvllpv alefqpqlvl vaagfdalqg dpkgemaatp
361 agfaqlthll mglaggklil sleggyaira laegvsaslh tllgdpcpm1 espgapcrsa
421 qasvscalea lepfwevlvr stetverdnm eednveesee egpweppvlp iltwvplqsr
481 tglvydqnmh nhcnlwdshh pevprilri morleelgia grcltitprp ateaelltch
541 saeyvghlra tekmtrelh ressnfdsiy icpstfacaq latgaacrly eavisgevin
601 gaaavrrppgh haeqdaacgf cffnsvavaa rhaqtisgha lrilivdwdv hhngntqhmf
661 eddpsvlyvs lhrydhgtff pmgdegassq igraagtgt vnvawngprm gdadylaawh
721 rlvlpiaeyf npelvlvsag fdaargdplg gcqvspegya hlthllmgl sgrilileg
781 gynltsises maactrsilg dpplltlpr pplsgalasi tetiqvhrry wrslrvmkve
841 dregpsssk1 vtkkapqpak prlaermtrr ekkvleagmg kvtsasfgee stpgqtnset
901 avvalcqddp seaatggatl aqtiseaaig ganlgqttse eavggatpdq ttsetvgga
961 ildqttseda vggatigqgt seeavggatl aqtiseaame gatldqttse eapgggteliq
1021 tplasstdhq tpptspvqgt tpqispstli gslrtlelgs esqgasesqa pgeenllgea
1081 aggdqdnadm lmqgsrgltd qai fyavtp1 pwcphlvavc pipaagldvt qpcgdcgtiq
1141 enwvclscyq vycgryingh mlqhhgnsgh plvlsyidl s awcyycayv hhqalldvkn
1201 iahqnkfged mphph (SEQ ID:11)

FIG. 6A

| |
|-----------|
| FIG. 6B-1 |
| FIG. 6B-2 |
| FIG. 6B-3 |

FIG. 6B

1 gggcagtccc ctgaggagcg gggctggttg aaacgctagg ggcgggatct ggcggagtgg
61 aagaaccgcg gcagggcca agcctcctca actatgacct caaccggcca ggatccacc
121 acaaccaggc agcgaagaag taggcagaac cccctcagga cccctcagga ctccagtgtc
181 acttcgaagc gaaatatataa aaaggagcc gtccccgct ctatcccaa tctagcggag
241 gtaagaaga aaggcaaat gaagaagctc ggcaagcaa tggaagaaga cctaatacgtg
301 ggactgcaag ggatggatct gaacctcgag gctgaagcac tggcttgggtg
361 ttggatgagc agttaaatga attccattgc ctctgggatg acagcttccc ggaaggccct
421 gagcgggtcc atgccatcaa ggagcaactg atccaggagg gcctcctaga tcgctgcgtg
481 tcctttcagg cccggtttgc tgaaaaggaa gagctgatgt tggttcacag cctagaatat

FIG. 6B-1

541 attgacctga tggaaacaac ccagtacatg aatgaggagg aactccgtgt ctagcagac
 601 acccagact cagtttatct gcatccgaac tcatactcct gtgcctgcct ggcctcaggc
 661 tctgtcctca ggctggtgga tgcggtcctg ggggctgaga tccggaacgg catggccatc
 721 attaggcctc ctggacatca cggccagcac agtcttatgg atggctatg catgttcaac
 781 cacgtggctg tggcagcccg ctatgctcaa cagaaacacc gcacccggag ggtccttacc
 841 gtagattggg atgtgcacca cgggtcaagg acacagttca ccttcgacca ggaaccagt
 901 gtcctctatt tctccatcca ccgctacgag cagggtaggt tctggcccca cctgaaggcc
 961 tctaactggt ccaccacagg tttcgggcaa gccaaggat ataccatcaa tgtgccttgg
 1021 aaccaggtag gtagcgggga tgctgactac atgtctgctt tcctgcacgt cctgctgcca
 1081 gtcgccctcg agctccagcc tcagctggtc ctggtggccg ctggatttga tgcctgcaa
 1141 ggggacccca agggcgagat ggccgccact ccggcagggt tgcgccagct aaccacctg
 1201 ctcatgggtc tggcaggagg caagctgac ctgtctctgg aggtggcta caacctccgc
 1261 gccctggctg aaggcgtcag tgcttcgctc cacaccctc tgggagacc tgccttccatg
 1321 cggagtcac ctggtgccc ctgccggag gccaggctt cagtttctcg tgccttggaa
 1381 gccctgagc ccttctggga ggttcttctg agatcaactg agaccgtgga gagggacaac
 1441 atggaggagg acaatgtaga ggagagcgag gaggaaggac cctgggagcc cctgtgctc
 1501 ccaatcctga calggccagt gctacagtct cgcacagggc tggctctatga ccaaatatg
 1561 atgaatcact gcaacttgtg ggacagccac caccctgagg taccacagc catcttgcgg
 1621 atcatgtgcc gtctggagga gctgggccct gccggcgct gcctcacctt gacaccgcgc
 1681 cctgccacag aggtgagct gctcacctgt cacagtgcctg agtacgtggg tcatctccgg
 1741 gccacagaga aatgaaaac ccgggagctg caccgtgaga gttccaactt tgactccatc
 1801 tatactgcc ccagtacctt cgctgtgca cagcttgcca ctggcgctgc ctgccgcctg
 1861 gtggaggctg tgctctcagg agaggtcctg aatggtgctg ctgtggtgcg tccccagga
 1921 caccacgag agcaggatgc agcttgcggt tttigctttt tcaactctgt ggtgttggct
 1981 gctcgccatg ccagactat cagtgggcat gccctacgga tcctgattgt ggattgggat
 2041 gtccaccacg gtaatggaac tcagcacatg tttgaggatg acccagtggt gctatatgtg
 2101 tccctgcacc gctatgatca tggcaccttc tccccatgg tcccatgagg tggcagcagc
 2161 cagatcggcc gggccgcttc cacaggcttc accgtcaacg tggcatggaa cgggccccgc
 2221 atgggtgatg ctgactacct agctgcctgg catcgccctg tgcttcccat tgcctacgag
 2281 tttaaccacg aactggtgct ggtctcagct ggctttgatg ctgcacgggg ggtccgctg

FIG. 6B-2

2341 gggggctgcc agtgtcacc tgagggttat gccaccta cccacctgct gatggcctt
2401 gccagtggcc gcattatcct tatcctagag ggtggctata acctgacatc catctcagag
2461 tccatggctg cctgcactcg ctccctcctt ggagacccac cacccttgct gaccctgcca
2521 cgcccccac tatcagggc cctggcctca atcactgaga ccaccaagt ccatacgaga
2581 tactggcgca gttacgggt catgaaggca gaagaccctc aaggaccctc cagttctaag
2641 ttggtcacca agaaggcacc ccaaccagcc aaacctaggt tagctgagcg gatgaccaca
2701 cgagaaaaga aggttctgga agcaggcatg gggaaagtca cctcggcatc atttggggaa
2761 gagtccactc caggccagac taactcagag acagctgtgg tggccctcac tcaggaccag
2821 ccctcagagg cagccacagg gggagccact ctggccaga ccattctga ggcagccatt
2881 gggggagcca tgctgggcca gaccacctca gaggaggctg tcgggggagc cactccggac
2941 cagaccacct cagaggagac tgtgggagga gccattctgg accagaccac ctcagaggat
3001 gctgttgggg gagccacgct gggccagact acctcagagg aggtgtagg aggagctaca
3061 ctggcccaga ccattctgga ggcagccatg gagggagcca cactggacca gactacgtca
3121 gaggaggctc cagggggcac cgagctgac caaactctc tagcctcgag cacagaccac
3181 cagacccccc caacctcacc tgtgcaggga actacacccc agatatctcc cagtacactg
3241 attgggagtc tcaggacctt ggagctaggc agcgaacctC agggggcctc agaattctcag
3301 gcccaggag aggagaacct accaggagag gcagctggag gtcaggacat ggctgattcg
3361 atgctgacgc agggatctag gggcctcact gatcaggcca tattttatgc tgtgacacca
3421 ctgccctggt gtcccattc ggtggcagta tgcccatac ctgcagcagg cttagacgtg
3481 acccaacctt gtggggactg tggaacaatc caagagaact aacaccatgg aaattctgga
3541 caggctacc gtggtcgtta catcaatggc cacatgctcc gcagcctggc gtttggggag
3601 caccgctgg tcctcagcca catcgacctg tcagcctggc gttactactg tcaggcctat
3661 gtccaccacc aggtctcct acccacata agcccagaa tacggctcct ctccacctc
3721 gatatgccc acccacata agcccagaa tacggctcct ctccacctc tgaggcccac
3781 gatagaccag ttccagcctg ttccaggctg tacctggat gaggggtagc ctccactgc
3841 atcccatcct gaatatcctt tgcaactccc caagagtgtc tatttaagt ttaatacttt
3901 taagagaact gcgacgatata attgtggatc tcccctgcc catcgcccgc ttgaggggca
3961 ccactactcc agcccagaag gaaaggggg cagctcagtg gcccaagag ggagccgata
4021 tcatgaggat aacattggcg ggaggggagt taactggcag gcatggcaag gttgcatacg
4081 taataaagta caagctgtt (SEQ ID NO: 12)

FIG. 6B-3

1 mdlrvqgrpp vepppeptll alqrpqrlhh hlflaglqqq rsvepmrlsm dtpmpelqvq
 61 pgeqelrqll hkdkskrsav assvkvkla evilkqkaa lertvhpnsip gipyrtlepi
 121 etegatrsm1 ssflppvpsi psdphefpl rktvsepnlk lrykpkksle rrknpllrke
 181 sappslrrrp aetlgdssps sstpasgcs spndsehgnp pilgdsdrtr hptlgprgpi
 241 lgsphtplfl phglepeagg clpsrlqipil lldpsgshap lltvpglgpl pfhfaqsimt
 301 terlsgsglh wplsrtsep lppsatappp pgpmqprleq lkthvqvikr sakpsekprl
 361 rqipseaedle tdggpggvv ddglehrelg hgqpeargpa plqhpqvii weqqlagrl
 421 prgstgdcvi lplaggghrp lsraqsspa pasisapepa sqarvlsse tpartlpflt
 481 gliydsvmlk hqscgdnr hpehagriqs iwsrlqergl rsqceclrgk kasieelqsv
 541 hserhvlllyg tnplsrlkl ngklagilaq rmfemlpcgg vgvtdtdiwn elhssnaarw
 601 aagsvtdlaf kvasrelkng favvrppghh adhstamgfc ffnsvaiacr qlqqqskask
 661 askilivdwd vhhngtqqt fyqdpvsvlyi slhrhddgnf fpqsgavdev gagsgegnv
 721 nvawaggldp pmgdpeylaa frivvmpiar efspdlvlvs agfdaaeghp aplggyhvsa
 781 kcfgymtqq1 mnlaggavvl alegghdlt a icdaseacva allgnrvdpl seegwkqkpq
 841 pqchplsgr dpgaq (SEQ ID NO:13)

FIG. 7A

| |
|-----------|
| FIG. 7B-1 |
| FIG. 7B-2 |

FIG. 7B

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```

1  ataataccta ccttgcagga ccacgacagg ataatgtgag gaaaaacccc catgagagtgt
61  ttttgccatt gtcaagtgtg cctgaggggag gctgaggggg gatacaggctg tatcatgccc
121  ccgaggacaa actttccagt ttaccctgct cctctctctt gtccctaggc tgcccaggcc
181  cctgcgagaa cacaccaggc cctagccgc gagccacat tgctggccct cctgcgggtg ggcagcggc
241  cccagtgga gcccaccca ctccctagca ggcctgcagc tgggacccca ggaacaagag ctgcggcagc
301  accaccacct ctccctagca ggcctgcagc tgggacccca ggcgtgtc cagcgtgtc atgaggctct
361  ccattggacac gccgacgccc gagttgcagg tgggacccca ggcgtgtc cagcgtgtc atgaggctct
421  ttctccacaa ggacaaagag aagcgaagtg ctgtagccag cagcgtgtc aagcagaagc
481  tagcggaggt gattctgaaa aaacagcagg cggccctaga aagaacagtc catcccaaca
541  gcccggcat tccctacaga acccggagc ccctggagac ggaaggagcc accggtcca
601  tgctcagcag ccttcgctt gacagtcctt gacagtcgag tgacccccc gagcactccc
661  ctctgcgcaa gacagtcctt gagcccaacc tgaagctgag ccataagccc aagaagtccc
721  cggagcggag gaagaatcca ctgctccgaa agtagagtgc gcccaccagc cccggcggc
781  gcccgcgaga gaccctcga gactcctccc caagtagtag cagcacgccc gcatcagggt
841  gcagtcccc caatgacagc gagcacggc ccaatcccat cctggcgac agtgaccgca
901  ggaccatcc gactctggg cccggggggc caatcctggg gagcccccac actcccctct
961  tcctgcccc tggcttggag cccgagggctg ggggcacctt gccctcccgc ctgcagccca
1021  tctctctctt ggaccctca ggctctcatg cccgctgct tgaactgtgc gactgtggc
1081  ccttgccctt ccactttgcc cagtccttaa tgaaccacga gcggctctct gggtcaggcc
1141  tccactggcc actgagccgg actcgtcag agccctgcc cccagtgcc accgctccc
1201  caccgcccgg cccatgcag cccgcctgg agcagctcaa aactcacgtc caggtgatca
1261  agaggtcagc caagccgagt gagaagcccc ggctgcggca gataccctcg gctgaagacc
1321  tgagacaga tggcgggga ccgggccagg tggtggacga cggccggag cacagggagc

```

FIG. 7B-1

1381 tgggccatgg gcagcccagag gccagaggcc ccgctcctct ccagcagcac cctcaggtgt
1441 tgctctggga acagcagcga ctggctgggc ggctccccg gggcagcac ggggacactg
1501 tgctgcttcc tctggcccag gttgggcacc ggctcttgt ccgggctcag tcttccccag
1561 ccgcacctgc ctcaactgtca gcccagagc ctgccagcca ctgccagtc ctctccagct
1621 cagagacccc tgccaggacc ctgccctca ccacagggt gatctatgac tcggtcatgc
1681 tgaagcacca gtgctcctgc ggtgacaaca gcaggcaccc ggagcacgcc ggccgcaccc
1741 agagcatctg gtcccggctg caggagcggg ggctcggag ccagtgtgag tgtctccgag
1801 gccggaagg ctccctggaa gagctgcagt cggccactc tgagcggcac gtgctcctct
1861 acggcaccaa cccgctcagc cgcctcaaac tggacaacgg gaagctggca gggctcctgg
1921 cacagcggat gtttgagatg ctgccctgtg gtggggttgg ggtggacact gacaccatct
1981 ggaatgagct tcattccLcc aatgcagccc gctgggccgc tggcagtgct actgacctcg
2041 cttcaaatg ggcttctcgt gagctaaaga atggtttcgc tgtggtgcgg ccccaggac
2101 accatgcaga tcattcaaca gccatgggct tctgcttctt caactcagt gccatcgcct
2161 gccggcagct gcaacagcag agcaaggcca gcaaggccag caagatcctc attgtagact
2221 gggacgtgca ccatggcaac ggcaccagc aaaccttcta ccaagacccc agtgtgctct
2281 acatctccct gcatcgccat gacgacggca acttcttccc ggctggggt ggaggtcttg
2341 aggtaggggc tggcagcggc gagggcttca atgtcaatgt atgtcgttg gatagtcgtg acgcccacg
2401 acccccacat gggggatcct gaggatcctg gagtacctgg ctgctttcag attgatgct gctgagggtc
2461 ccgagagtt ctctccagac ctatcctggc taccatgttt ctgccaaatg ttttggatag atgacgcagc
2521 acccgcccc acLgggtggc tgacgcctct gaggcctgtg tggctgctct tctgggtaac aggggtggatc
2581 aactgatgaa cctggcagga ggcgagtggt ggcgagtggt ggcgagtggt agcgcctggc ctctctggag
2641 cagccatctg agaaaggctgg taaatactgg ggcgagtggt ggcgagtggt agtgaccgca
2701 ccctttcaga agaaaggctgg taaatactgg ggcgagtggt ggcgagtggt agtgaccgca
2761 gccgtgatcc ggcgttagagt gccagggggt ggcgagtggt ggcgagtggt agtgaccgca
2821 gactcctggg tctctgtggg catcctggct ggcgagtggt ggcgagtggt agtgaccgca
2881 ctggcgctcc ctatgaatct ctaaggctct ggcgagtggt ggcgagtggt agtgaccgca
2941 gaggaagaac ctatgaatct ctaaggctct ggcgagtggt ggcgagtggt agtgaccgca
3001 ggacctgggt ctcttctaac ccctggcaat agcccccat cctgggtctt tagagatcct
3061 gtgggcaagt agttggaacc agagaacagc ctgcctgctt tgacagttat cccagggagc
3121 gtgagaaat c (SEQ ID NO:14)

FIG. 7B-2

1 meepeepads gqslvpvyiy speyvsmcde lakipkrasm vhsleayal hkqmrivkpk
61 vasmeematf htdaylqhlq kvsqegdddh pdsieyglgy dcpategifd yaaaiggati
121 taaqclidgm ckvainwsgg whhakkdeas gfcylndavl gilrlrrkfe rilyvdldlh
181 hgdgvedafs ftskvmtvsl hkfspgffpg tgdvsdvglg kgryysvnpv iqdgigdeky
241 yqicesvlke vyqafnpkav vlqlgadtia gdpmcfsfnt pvgigkclky ilqwqlatli
301 lggggynlan tarcwtyltg vilgktlisse ipdbefftay gpdyvleitp scrpdrneph
361 riqqilnyik gnlkhvv (SEQ ID NO:15)

FIG. 8A

```

1  gaaattcggc acgagctcgt gccgaattcg gcacgagaaac ggttttaagc ggaagatgga
61  ggagccggag gaaccggcgg acagtgggca gtcgctggtc ccggtttata tctatagtcc
121 cgagtatgtc agtatgtgtg actccctggc caagatcccc aacggggcca gtatggtgca
181 ttcttttgatt gaagcatatg cactgcataa gcaaatgagg atagttaagc ctaaagtggc
241 ctccatggag gagatggcca cctccacac tgatgcttat ctgcagcatc tccagaaggt
301 cagccaagag ggcgatgatg atcatccgga ctccatagaa tatgggctag gttatgactg
361 ccagccact gaagggatat ttgactatgc agcagctata ggaggggcta cgatcacagc
421 tgcccaatgc ctgattgacg gaatgtgcaa agtagcaatc aactggtctg gaggtggca
481 tcatgcaaag aaagatgaag catctggttt tcgttatctc aatgatgctg tcctgggaa
541 attacgatg cgacggaaat ttgagcgtat tccctacgtg gattcggatc tgcaccatgg
601 agatggtgta gaagacgcat tcagtttcac ctccaaagtc atgaccgtgt ccctgcacaa
661 attctcccca gattttttcc caggaacagg tgacgtgtcc gacgttggcc tagggaaggg
721 acggtactac agtgtaaatg tgcccatcca ggatggcata caagatgaaa aatatacca
781 gatctgcgaa agtgtaactaa aggaagtata ccaagccttt aatcccaag cagtgggtctt
841 acagctggga gccgacacaa tagctgggga tcccatgtgc tcctttaaca tgaactccagt
901 gggaattggc aagtgtctca agtacatccc tcaatggcag ttggcaacac tcatttcggg
961 aggaggaggc tataaccttg ccaacacggc tcgatgctgg acatactga ccggggtcat
1021 cctagggaaa acactatcct ctgagatccc agatcatgag tttttcacag catatggtcc
1081 tgattatgtg ctggaaatca cgccaagctg ccggccagac cgcaatgagc tgcaccgaa
1141 ccaacaaatc ctcaactaca tcaagggaaa tctgaagcat gtggtctagt tgacagaaa
1201 agatcagggt tccagagctg aggagtgggtg cctataatga agacagcgtg tttatgcaag
1261 cagtttgrgg aatttgtgac tgcagggaaa atttgaaga aattacttcc tgaaaatttc
1321 caaggggcat caagtggcag ctggcttcct ggggtgaaga ggcaggcac ccagagtcc
1381 caactggacc taggggaaga aggagatarc ccacatttaa agttcttatt taaaaaaca
1441 cacacacaca aatgaaattt ttaatctttg aaaattattt ttaagcgaat tggggagggg
1501 agtattttaa tcattcttaa tgaacagat cagaagctgg atgagagcag tcaccagttt
1561 gtagggcagg aggcagctga caggcagggn tngggcctcn ggaccancca ngtggagccc
1621 tgggagagan ggtactgac ngcagactgg gagg (SEQ ID NO:16)

```

FIG. 8B

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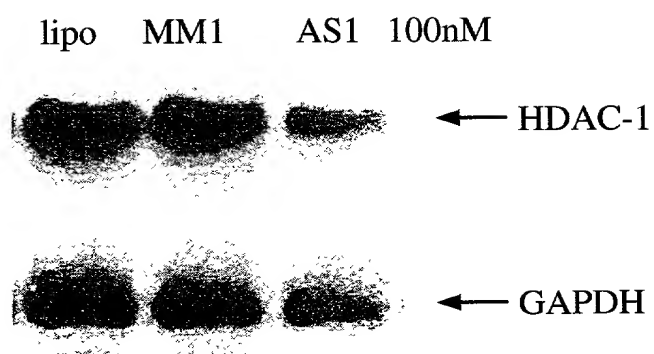


FIG. 9A

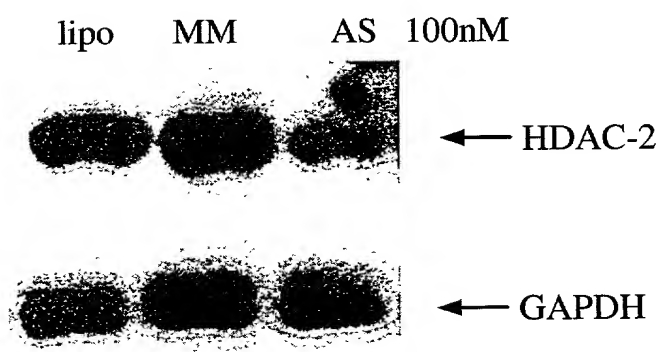


FIG. 9B

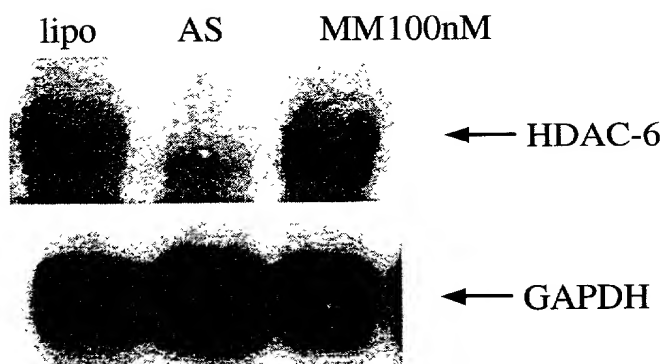


FIG. 9C

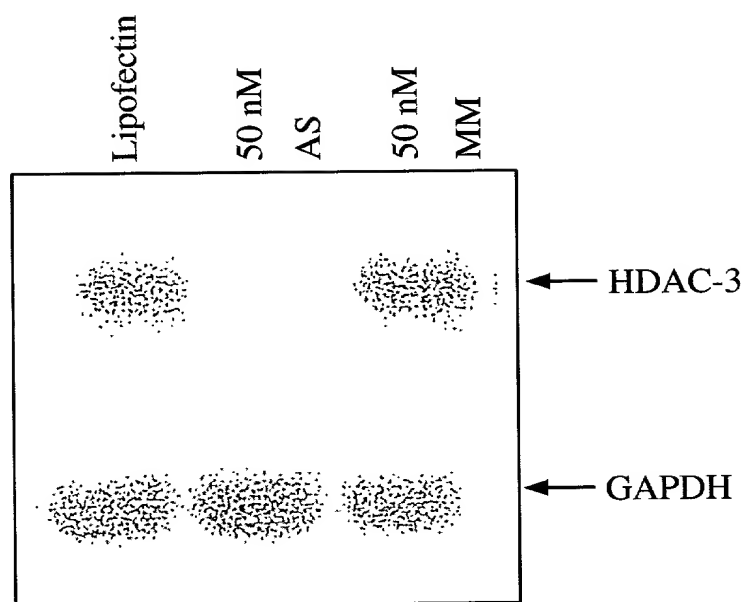


FIG. 9D

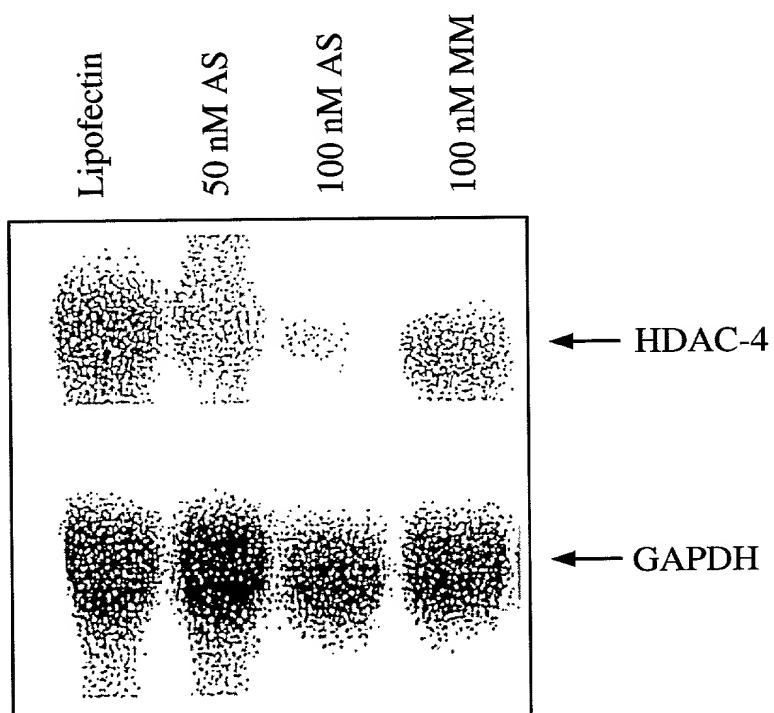


FIG. 9E

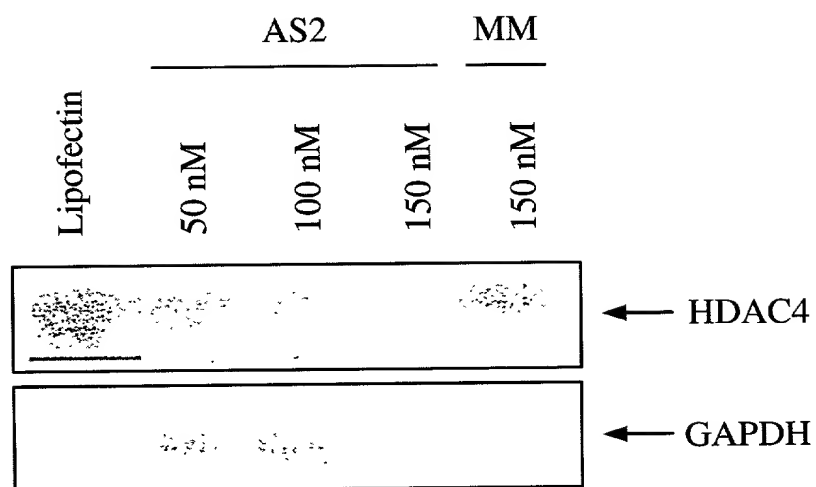


FIG. 9F

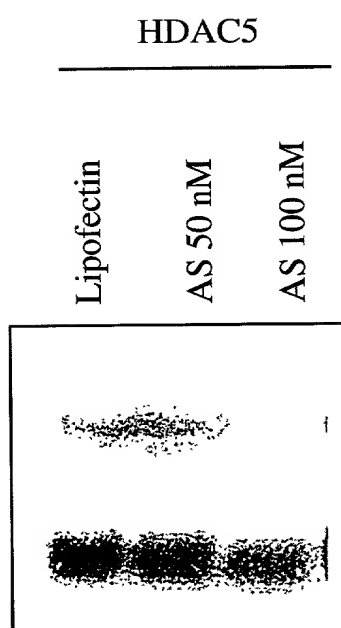


FIG. 9G

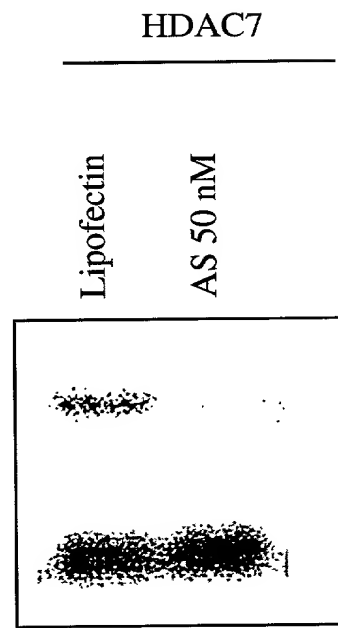


FIG. 9H

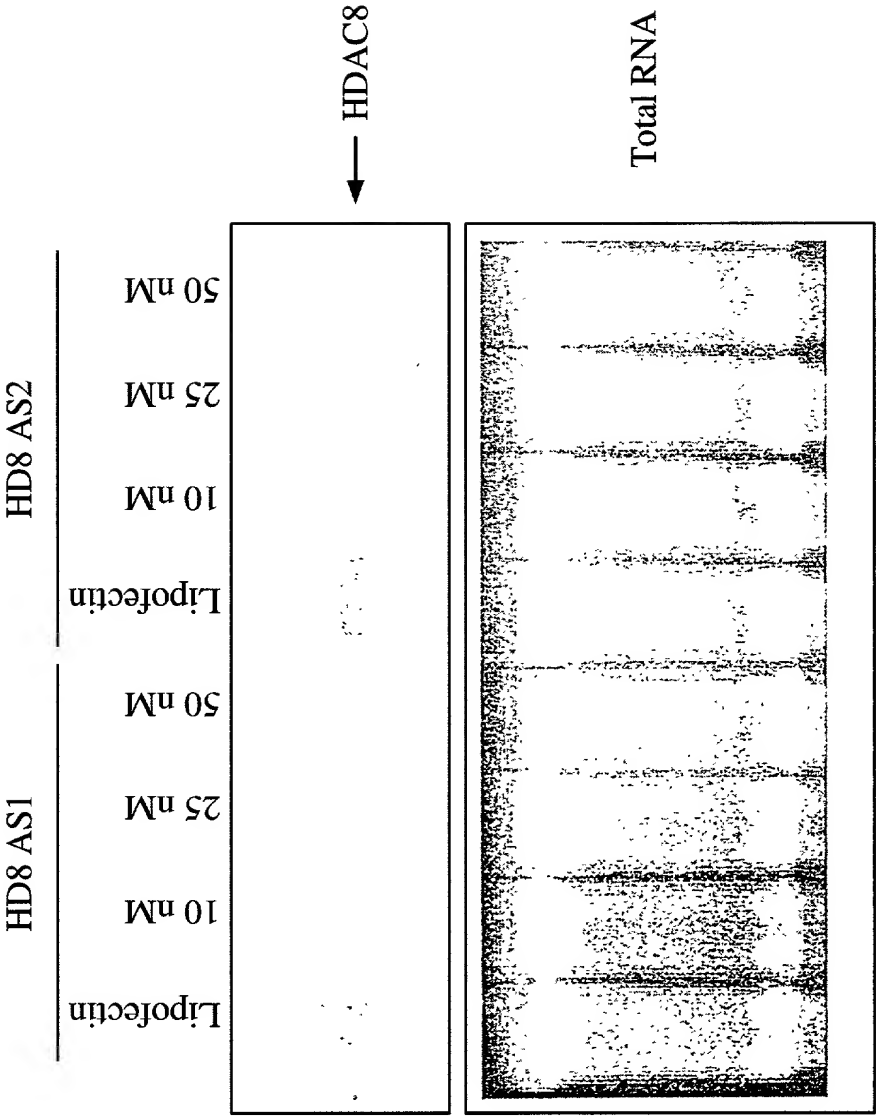
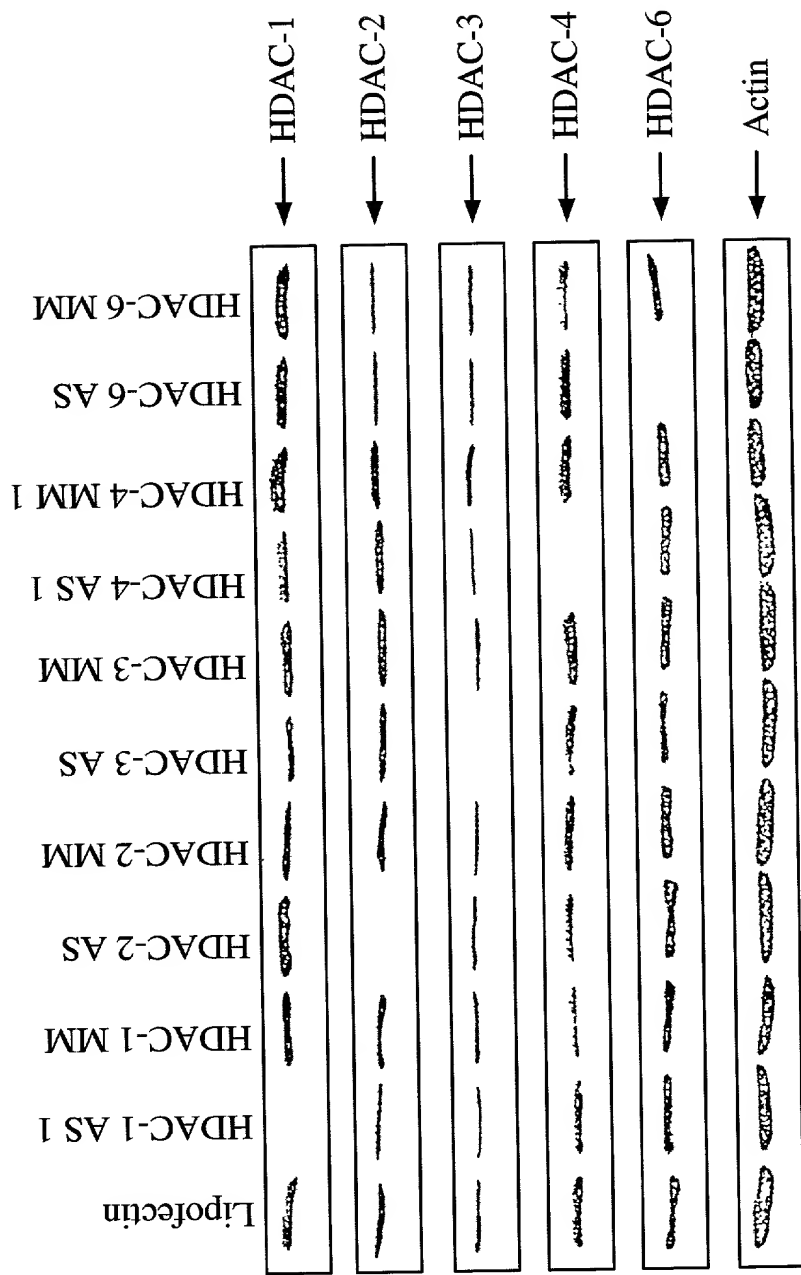


FIG. 9I



AS = Antisense
MM = Mismatch
NS = Non-specific control
3 day treatment
Oligonucleotide cone – 50nM

FIG. 10A

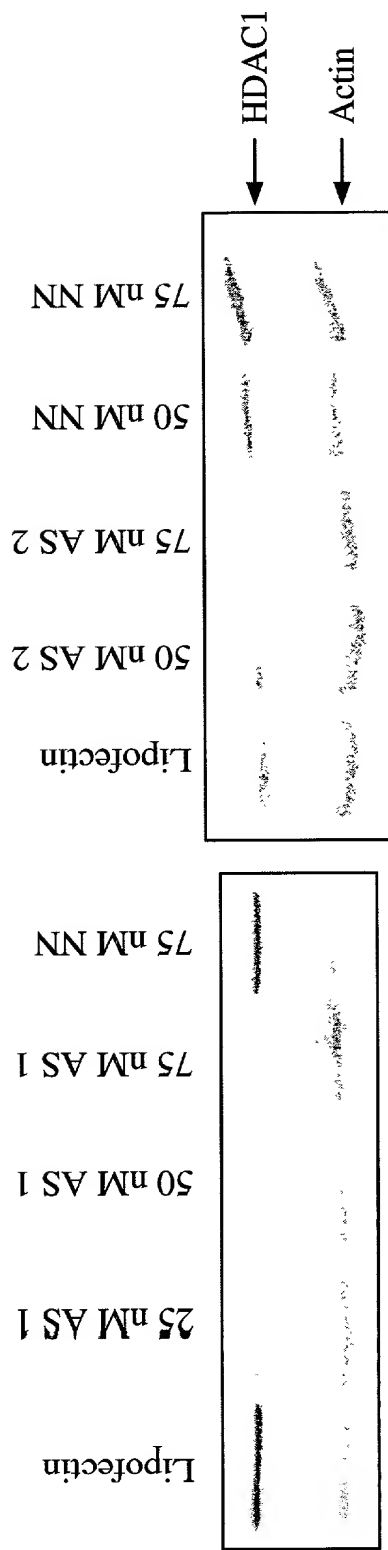


FIG. 10B

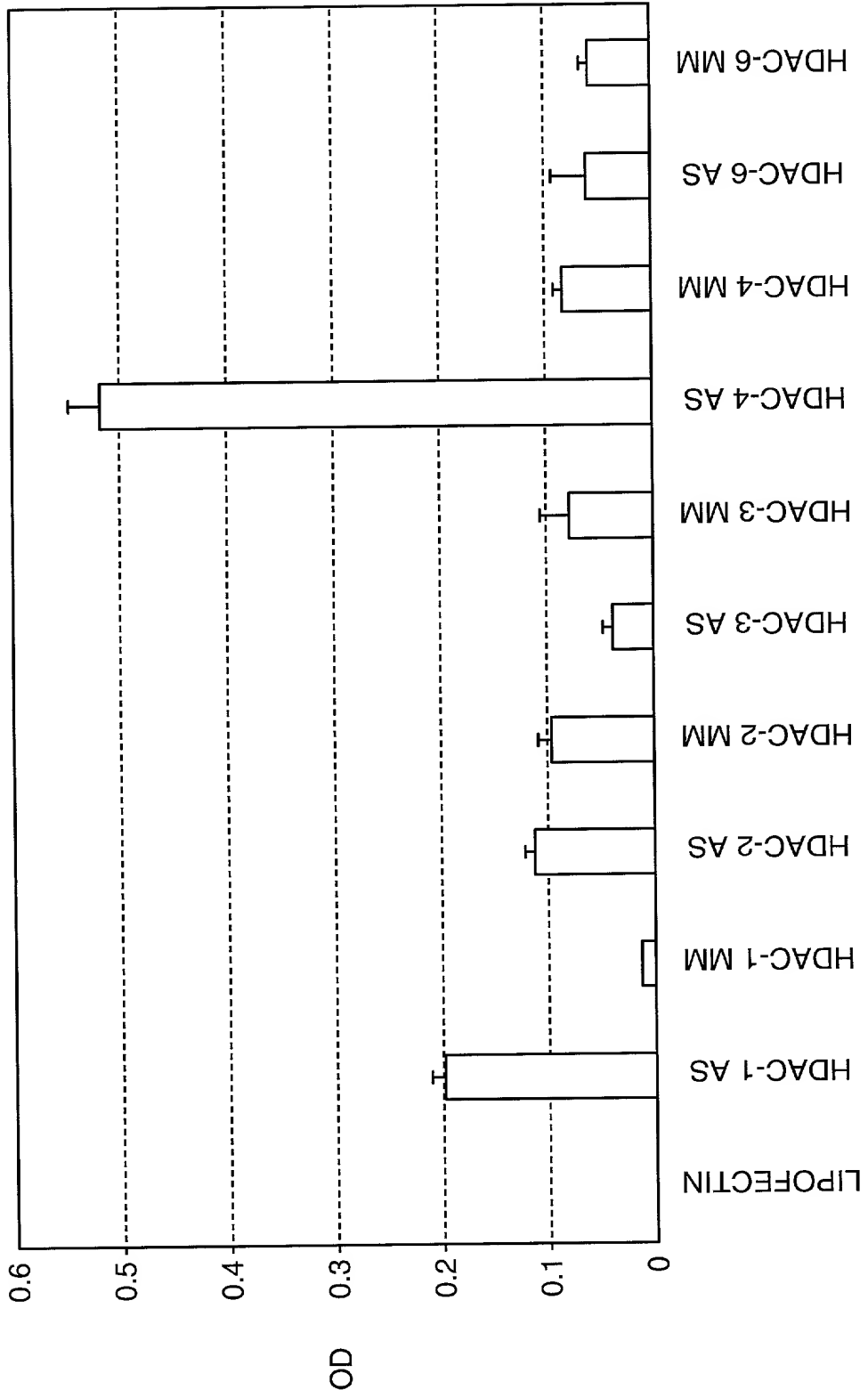


FIG. 11

FIG. 11 is a bar chart showing the OD (Optical Density) for various treatments. The y-axis is labeled 'OD' and ranges from 0 to 0.6. The x-axis lists the treatments: LIPOFECTIN, HDAC-1 AS, HDAC-1 MM, HDAC-2 AS, HDAC-2 MM, HDAC-3 AS, HDAC-3 MM, HDAC-4 AS, HDAC-4 MM, HDAC-6 AS, and HDAC-6 MM. HDAC-4 AS shows the highest OD, followed by HDAC-4 MM and HDAC-6 AS. LIPOFECTIN and HDAC-1 MM show very low OD values.

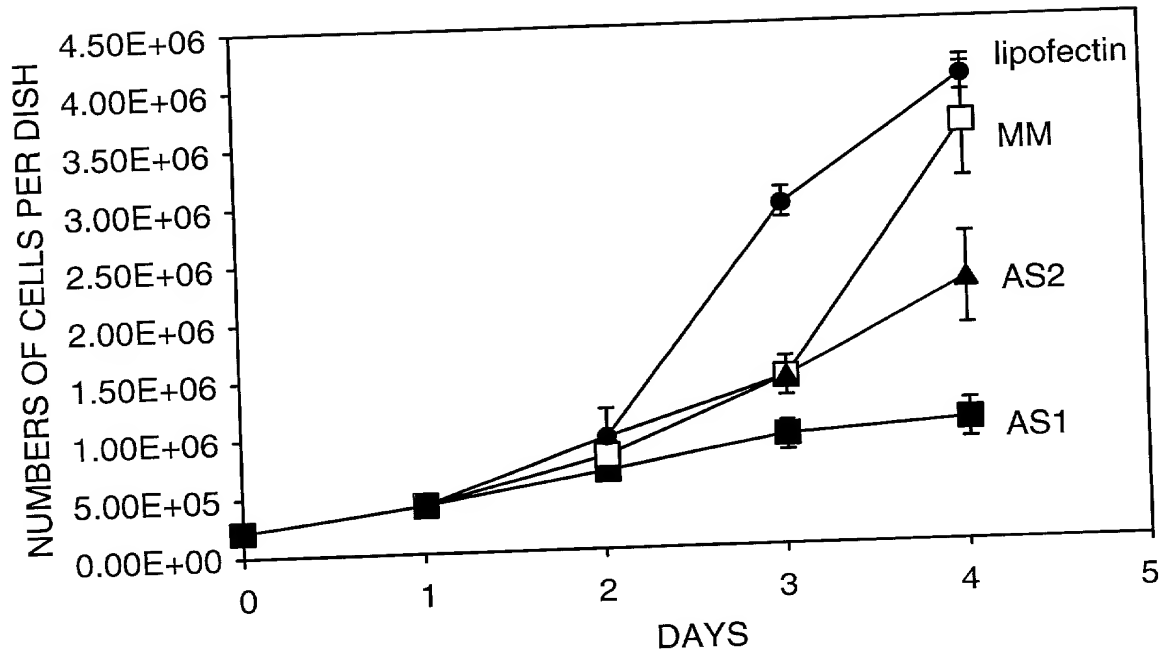


FIG. 12A

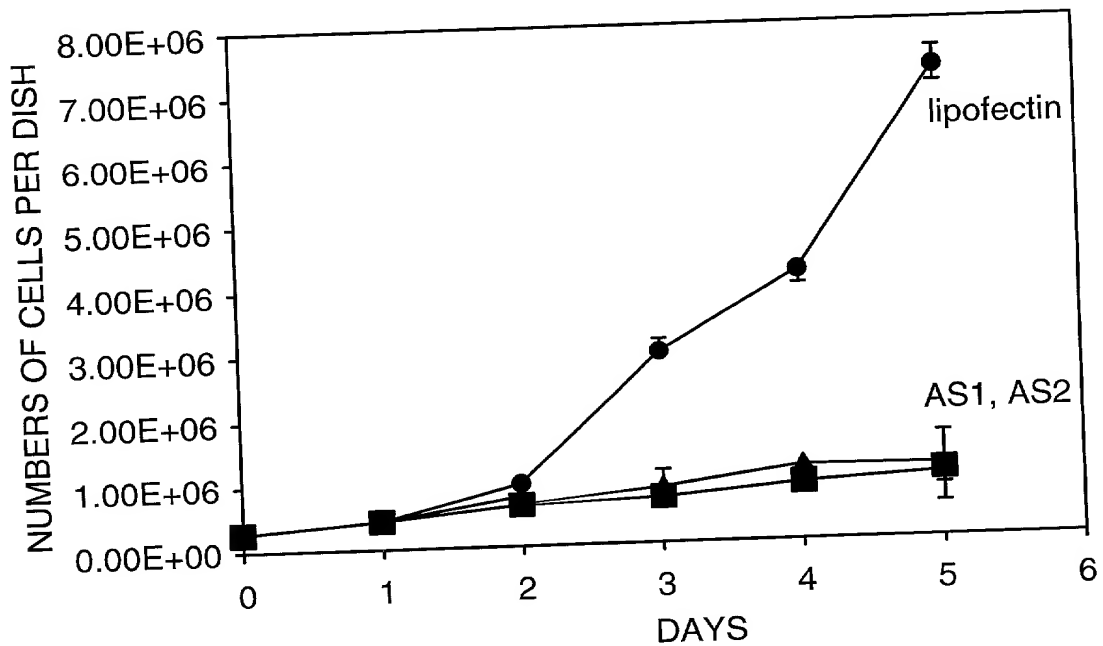


FIG. 12B

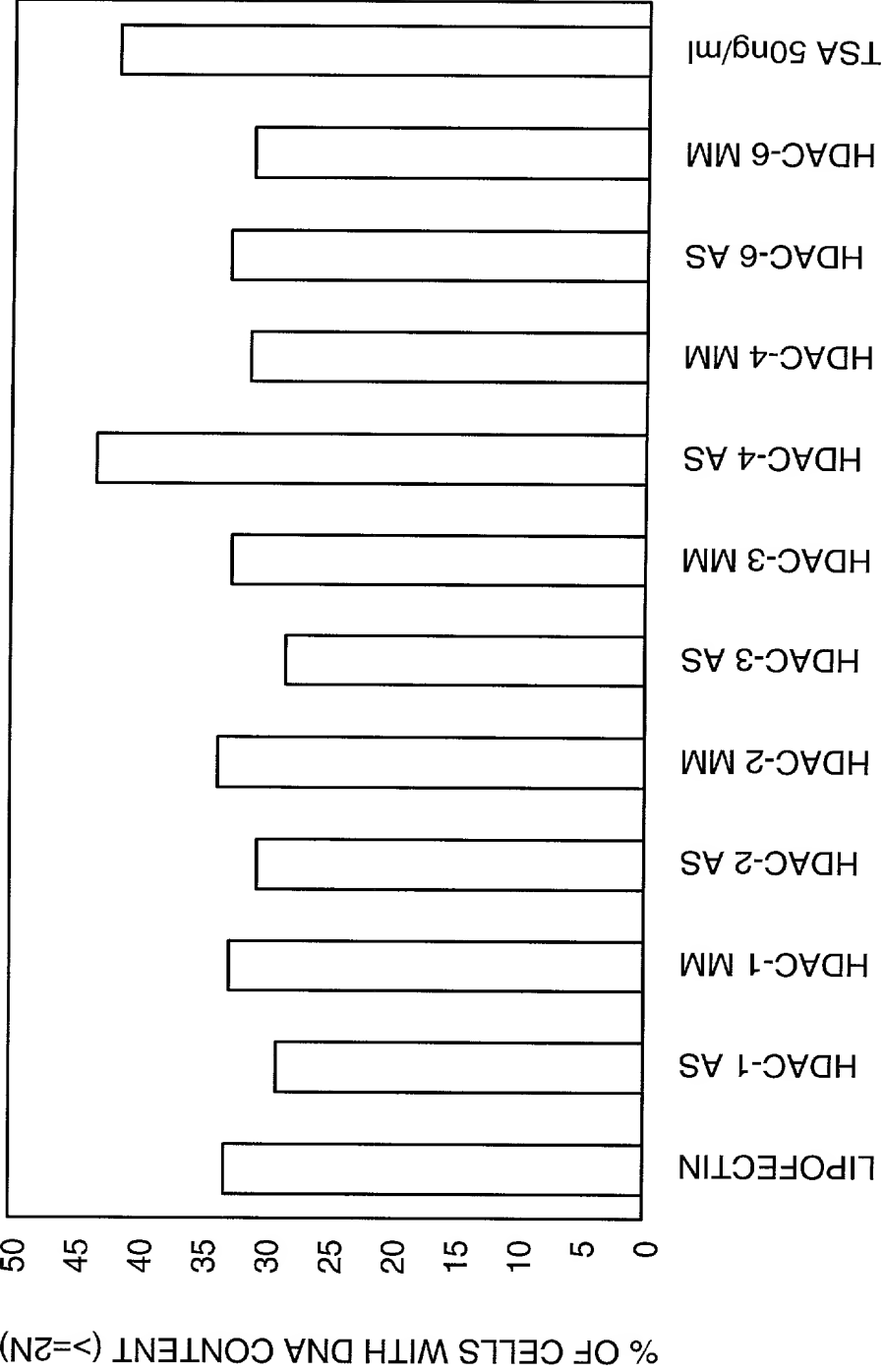


FIG. 13

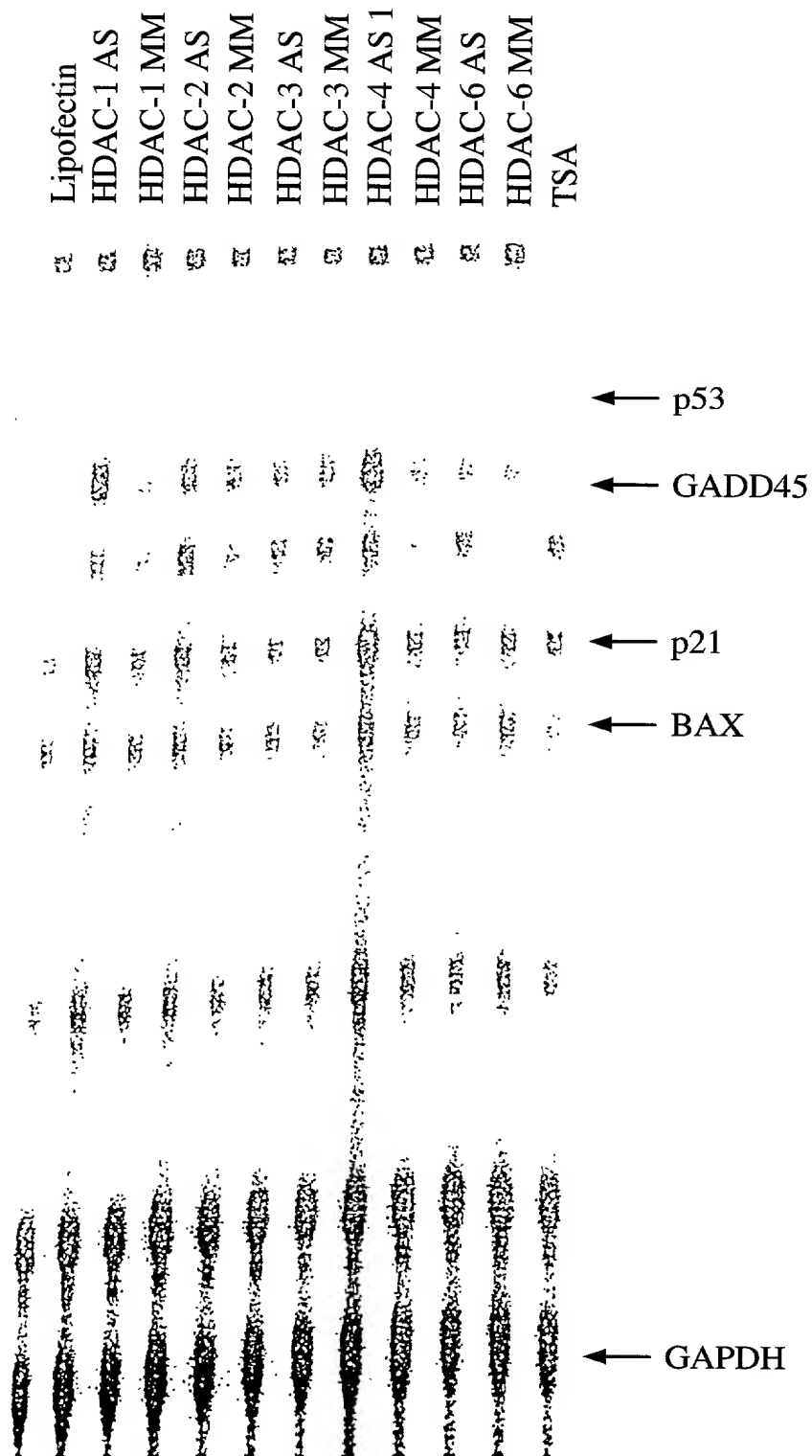


FIG. 14

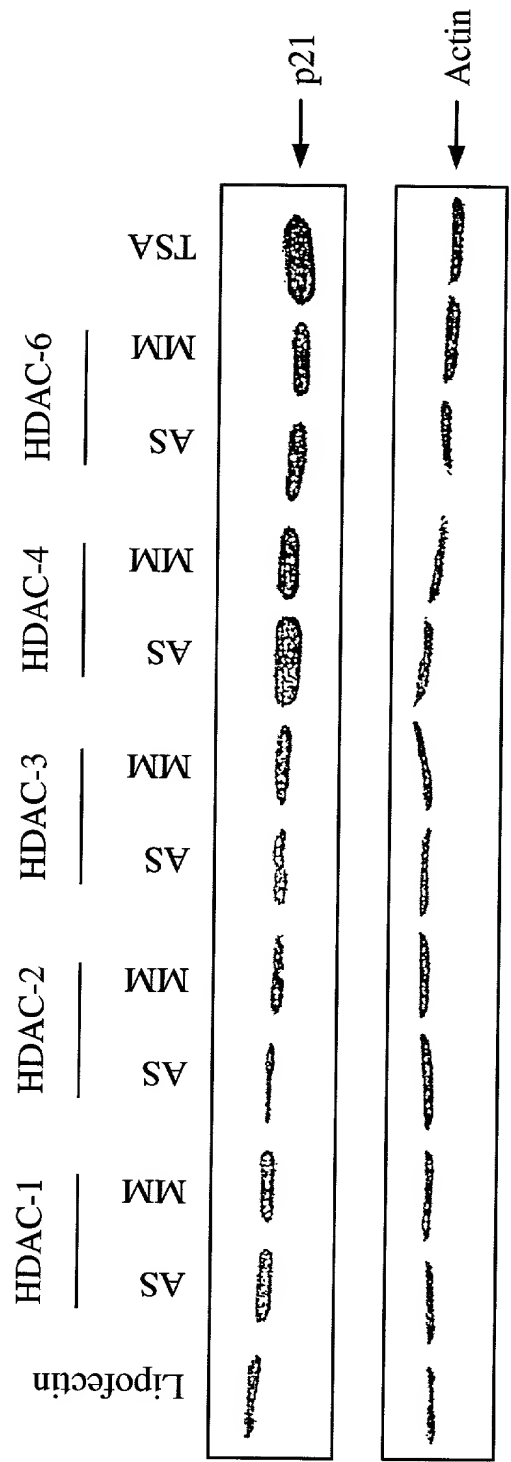


FIG. 15

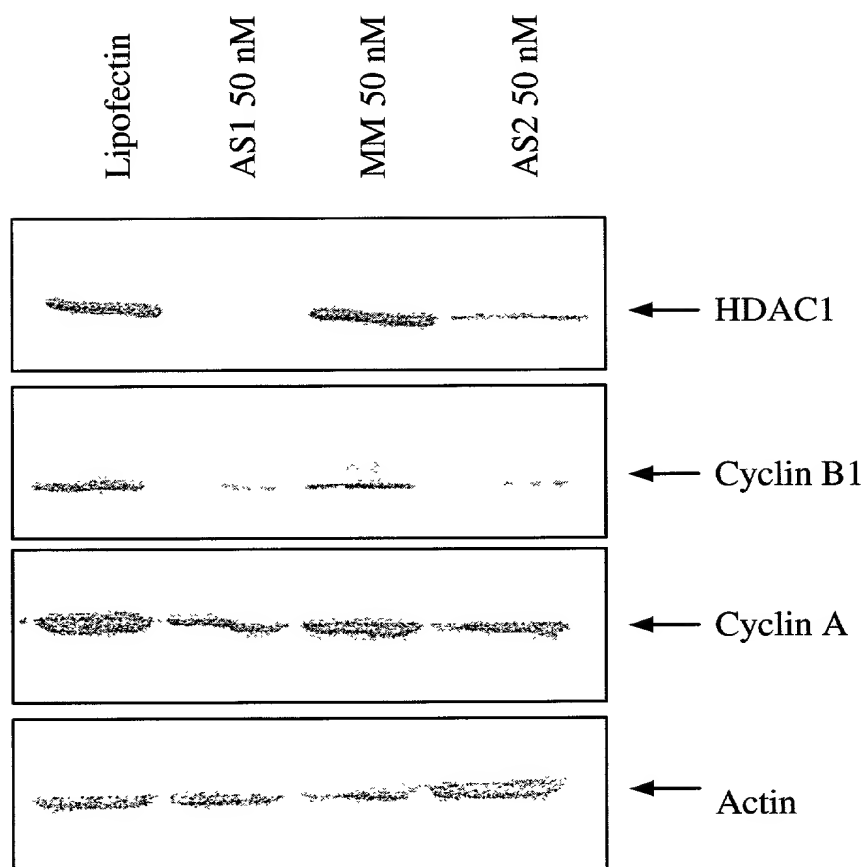
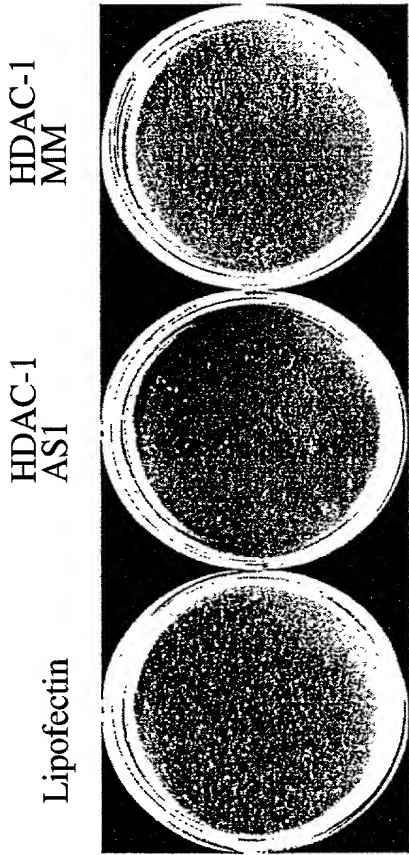
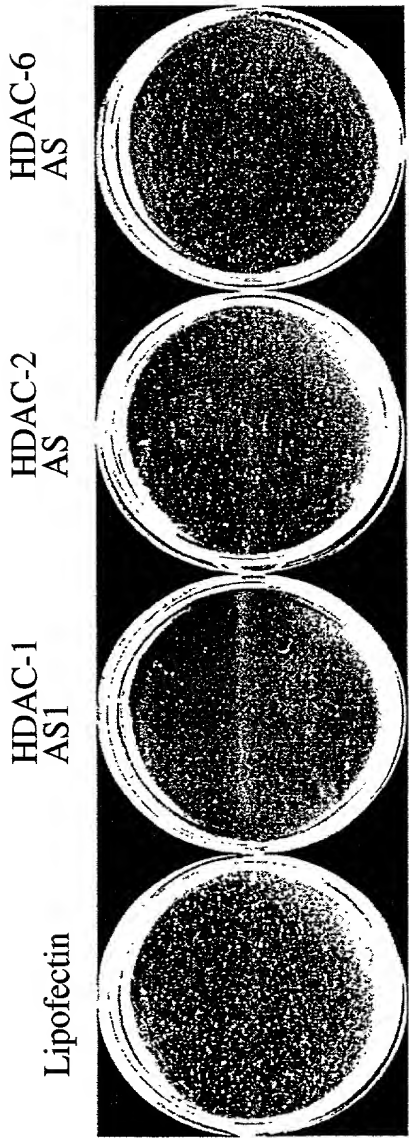


FIG. 16



Colony Numbers -1200 -120 -1160

FIG. 17A



Colony Numbers -1200 -120 -890 -730

FIG. 17B

Compound 3

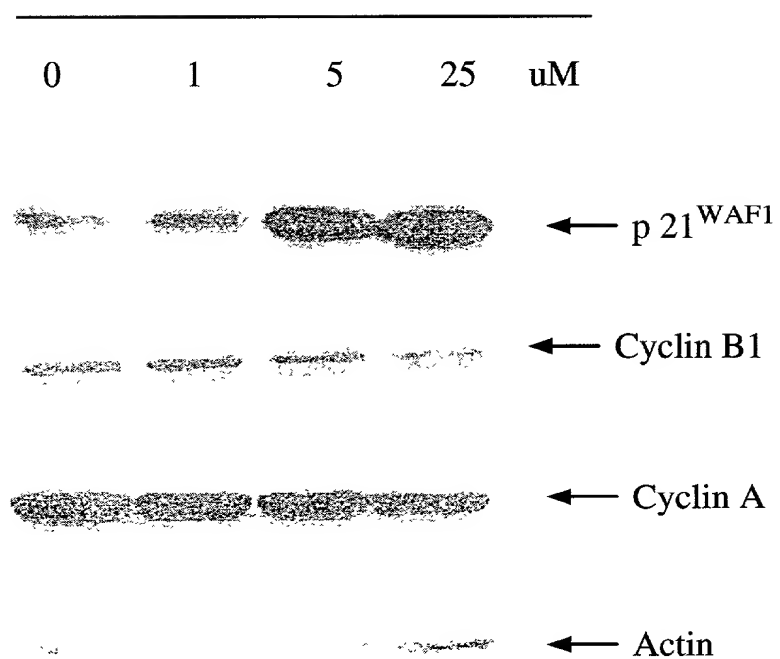


FIG. 18